

Glucose-6-phosphate Dehydrogenase Deficiency and Pre-eclampsia: Possibility of Treatment

Dear Editor,

I read with interest a paper from Zekavat and associates,¹ concerning the possible association between glucose-6-phosphate dehydrogenase (G6PD) deficiency and development of preeclampsia. This study did not confirm their hypothesis that there was a relationship between G6PD and preeclampsia development. However, there is a possibility that future studies, performed using higher number of patients, might confirm this hypothesis.

A question emerges how such patients can be effectively managed. To my opinion, there is a possibility of treatment of G6PD deficient patients with S-adenosylmethionine (SAME). Glucose-6-phosphate dehydrogenase is the principal enzyme in a metabolic process, which results in the production of NADPH, a key metabolite involved in the regeneration of reduced (GSH) from oxidized (GSSH) glutathione.² Low levels of GSH in erythrocyte predisposes erythrocytes of G6PD-deficient people to spontaneous hemolysis, or hemolysis after exposure to oxidizing agents.³ However, in addition to regeneration, new GSH in human cells can also be synthesized de novo from SAME. S-adenosylmethionine is the principal substrate for the synthesis of GSH,⁴ and studies in this area point that SAME supplementation increases GSH synthesis in liver of patients with alcoholic and other forms of liver diseases.⁵ Studies in cats have also confirmed that SAME supplementation reduces oxidative products in membranes of erythrocytes, protects erythrocytes from oxidative damage, and increases liver GSH and GSH/GSSH ratio.^{6,7} Therefore, there is a possibility that SAME supplementation might increase erythrocyte and placental GSH content in G6PD deficient patients, leading to the termination of hemolysis when it is present and decrease oxidative stress. Therefore, there is a rationale to try SAME treatment in patients with G6PD deficiency. If Zekavat's team establishes a relationship between G6PD deficiency and preeclampsia in their future study, they might also try using SAME for the therapy of both above-mentioned disorders as well.

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